Question number	Answer	Notes	Marks
1 (a) (i)	11.1;; give two marks if 11.1 in working but 11 on dotted line	Allow one mark for 11, 900 or 100 in working	2
(ii)	not eaten / eq; (plant) respiration; active transport;	Ignore loss by heat / movement / excretion / egestion / growth	2
(b)	1. m th / saliva / salivary gland; 2. ylase / maltase / carbohydrase; (ONCE) 3. p creas / <u>small</u> intestine / eq; 4. maltose / glucose;	3. low small intestine if linked to absorption 4. Ig re sugar	Max 3
			Total 7 marks

Question number	Answer	Notes	Marks
2 (a)	respiration / aerobic respiration / anaerobic respiration;		1
(b)	pollination / transfer pollen / eq;	Ignore reproduction / collect nectar	1
(c)	1. producer; 2. secondary consumer 3. tertiary consumer;	 Reject primary consumer Ignore carnivore	2
(d)	1. avoids closing unnecessarily / by accident / due to wind / debris / when no insect is present / only closes with an insect / must be a big insect / eq; 2. avoids wasting energy / enzymes / digestive fluid;		2
(e)	1. solution (more) concentrated / reduced water potential / less water in cell / more ions / minerals / solutes / high salt concentration / eq; 2. water enters by osmosis;	Allow converse for Mp1 Ignore water concentration	2

(f)	1. prevent infection / disease / may be pathogenic; 2. prevent competition (for food) / prevent loss of energy from insect / prey;	Ignore harm / illness / produce toxins Eg. prevent decomposition of insect / feeding on insect / taking nutrients from insect / digesting insect Ignore digesting / decomposing / feeding on plant	2
(g))	(slower rate) 1. no/less mechanical digestion / mechanical breakdown / not broken into pieces / eq; 2. less surface area / small SA:VOL; 3. (for) enzymes;	Allow converse Ignore crush / chew	Max 2
(ii)	protease / carbohydrase / lipase / eq;	Allow any named digestive enzyme	1

(h)	1. temperature; 2. (kinetic) energy / collisions / <u>movement</u> of molecules / enzymes / substrates / more enzyme substrate complexes; OR 3. size / shape / mass of insect; 4. (surface area for) enzyme contact / eq; OR 5. composition of insect / type of insect; 6. exoskeleton / indigestible; OR 7. amount of enzyme / enzyme concentration; 8. collisions / more enzyme substrate complexes / eq;	Pairs of Mps are linked Ignore enzymes work faster / denature Ignore pH Ignore shell	Max 4

Total 17

Question number	Answer	Notes	Marks
3 (a)	different diet / different species / eq;	Ignore nitrogen Eg. eat different food / eat more food / different amounts of protein / different amounts of nitrogenous food / different amounts of nitrogen compounds in food / one is carnivorous Eg. type of fish / breed of fish / strains of fish / genes in fish / metabolism of fish	1
(b)	28.9 / 28.92;	Allow one for 0.4 / 0.0723 / 2.5 in working Allow 28.9 / 28.92 in working for 2 marks if 29 on answer line	2

(c)	1. plant / algae growth / algal bloom / eq; 2. algae block light; 3. less photosynthesis; 4. ecomposers / decomposition / bacteria / microbes / <u>micro</u>organisms / fungi; 5. respiration; ONCE 6. oxygen depletion / anoxic; ONCE 7. death of plants / fish / organisms;		Max 5

(d)	1. ead / attenuated / harmless / inactive / weakened / modified / pathogen / bacteria / microbe / microorganism / virus / eq; 2. an gens; 3. memory cells; 4. secondary immune response / <u>faster immune</u> response / antibody produced <u>faster / sooner / quicker / more</u> ;	Dead form of the disease = 0 Dead strain = 0 Ignore dead virus Ignore antibody production in primary immune response	4

Question number	Answer	Notes	Marks
4 (a)	goshawks / bird of prey / named bird of prey;		1
(b)	1. small(er) SA:VOL; 2. less heat loss / retain heat / keep warm; 3. more fat / food reserves; 4. (for) respiration / energy / insulation;	1. allow larger VOL:SA 4. must be linked to Mp3	2
(c)	1. more food / seeds / eq; 2. warmer / not cold / eq;	ignore in good condition ignore lack of predators	2
(d) (i)	(place/area/environment) where organisms/plants/animals/population/community live / eq;		1
(ii)	number / how many / all / amount OF <u>same</u> / <u>a</u> / <u>one</u> / <u>the</u> <u>species</u>;	allow number of red/grey squirrels ignore number of squirrels ignore number of species	1
(e)	5.3(03)%;;	one mark for 2 640 000 in working	2
(f)	1. better competitors / outcompete / eq; 2. more resistant to disease; 3. better camouflage / description of camouflage / eq; 4. fewer predators / not eaten by goshawks / eq; 5. fecundity / reproduce more / eq;		2

(g)	1. study area with red AND study area with grey squirrels; 2. count / record / compare number of woodland birds; 3. same area / type / sample of woodland / eq; 4. eference to time; 5. idea of repeating;	2. monitor = 0 allow count / record with any method	3
(h)	1. trap / shoot / poison / kill / hunt grey squirrels / eq; 2. (captive) breeding of red squirrels / cloning / zoos / selective breeding; 3. provide more food / pine cones / seeds; 4. set up nature reserves / fencing / move to place with no grey squirrels / eq; 5. biological control / shoot goshawk; 6. vaccination / antibiotic;	4. eg restrict human access	2

(Total for Question = 16 marks)